

## CLAIMS

What is claimed is:

1. A sound processor for use within a cochlear implant system, the cochlear implant system including an implantable cochlear stimulator adapted to receive stimulation signals and power from a source external to the implantable cochlear stimulator, the sound processor comprising:
  - a microphone adapted to receive sound signals and convert them to electrical signals;
  - a sound processing circuit adapted to receive the electrical signals from the microphone and convert them to a stimulation signal, and further adapted to generate a power signal;
  - a headpiece connected to the sound processing circuit, the headpiece adapted to transfer the stimulation signal and the power signal from the sound processing circuit to the implantable cochlear stimulator; and
  - a power source integrally housed within the sound processor and adapted to provide operating power for the sound processing circuit and implantable cochlear stimulator.
2. The sound processor of Claim 1 wherein the headpiece comprises a microphone.
3. The sound processor of Claim 1, the power source comprising a replenishable power source.
4. The sound processor of Claim 3 wherein the replenishable power source comprises a rechargeable battery.

5. The sound processor of Claim 4 wherein the rechargeable battery comprises a Lithium-Ion battery.
6. The sound processor of Claim 3 further comprising a coil integrally included within the sound processor and coupled to the sound processing circuit and replenishable power source, the coil adapted to selectively receive power from an external charging source and recharge the replenishable power source when the sound processor is in proximity to the external charging source.
7. The sound processor of Claim 6 wherein the coil and sound processing circuit are further adapted to receive external control signals from an external source that controls the operation of the sound processing circuits.
8. The sound processor of Claim 7 further including at least one sensor integrally included therein adapted to sense proximity to the external charging source.
9. A cochlear implant system comprising:  
an implantable portion;  
an external portion comprising  
a headpiece, and  
a sound processor,  
wherein the sound processor comprises sound processing circuits, a battery and a coil integrally housed within a closed case; and  
a remote control unit adapted to electromagnetically communicate through the coil to allow operating parameters of the sound processing circuits to be selectively adjusted.

10. The cochlear implant system of Claim 9 wherein the battery is rechargeable, the cochlear implant system further comprising a base station having recharging circuitry housed therein adapted to recharge the rechargeable battery of the sound processor through the coil when the sound processor is placed in close proximity to the base station.
11. The cochlear implant system of Claim 10, the external portion further comprising:
- a microphone adapted to receive sound signals and convert them to electrical signals;
  - wherein the sound processing circuits are adapted to receive the electrical signals from the microphone and convert them to stimulation signals, and further adapted to generate power signals; and
  - wherein the headpiece is connected to the sound processing circuits, the headpiece adapted to transfer the stimulation signals and the power signals from the sound processing circuits to the implantable portion.
12. The cochlear implant system of Claim 10 wherein the headpiece comprises a microphone.
13. The cochlear implant system of Claim 10 wherein the rechargeable battery of the sound processor is adapted to provide operating power for the sound processing circuits and the implantable portion.
14. The cochlear implant system of Claim 13 wherein the rechargeable battery comprises a Lithium-Ion battery.
15. The cochlear implant system of Claim 10 wherein the headpiece comprises a coil and the base station further comprises:

a control circuit coil; and  
control circuits, wherein the control circuits are adapted to control and monitor the recharging process based on feedback signals received through the control circuit coil from the sound processor through the coil of the headpiece.

16. The cochlear implant system of Claim 15 comprising at least one visual display wherein the control circuits are connected to the at least one visual display.

17. A cochlear implant system comprising:  
an implantable portion;  
an external portion comprising  
a headpiece, and  
a sound processor,  
wherein the sound processor includes sound processing circuits, an antenna coil, a rechargeable battery integrally housed within a closed case, and electrical contacts embedded within or carried on a surface of the closed case that are in electrical contact with the rechargeable battery;  
a remote control unit adapted to electromagnetically communicate through the antenna coil to allow operating parameters of the sound processing circuits to be selectively adjusted; and  
a base station comprising a charging circuit and a primary power source, and further having terminals in electrical contact with the charging circuit, and means for holding the sound processor in such a way that the electrical contacts of the sound processor contact the terminals of the base station so that the charging circuit is connected electrically with the rechargeable battery, and so that the rechargeable battery of the sound processor may be recharged from

the primary power source of the base station, when the sound processor is held within the base station.

18. The cochlear implant system of Claim 17, the external portion further comprising:

a microphone adapted to receive sound signals and convert them to electrical signals;

wherein the sound processing circuits are adapted to receive the electrical signals from the microphone and convert them to stimulation signals, and further adapted to generate power signals; and

wherein the headpiece is connected to the sound processing circuits, the headpiece adapted to transfer the stimulation signals and the power signals from the sound processing circuits to the implantable portion.

19. The cochlear implant system of Claim 17 wherein the headpiece comprises a microphone.

20. The cochlear implant system of Claim 17 wherein the rechargeable battery comprises a Lithium-Ion battery, which battery is adapted to provide operating power for the sound processing circuits and the implantable portion.